

Appl. No. 10/028,434
Amdt. Dated April 26, 2005
Reply to Office action of January 28, 2005
Attorney Docket No. P15134-US1
EUS/J/P/05-3097

Amendments to the Specification:

Please replace the paragraph beginning at page 6, line 8, with the following amended paragraph.

The theoretical basis underlying one aspect of the present invention may be seen in FIG. 2. When the mobile terminal 80 synchronizes and transmits to BSS A 60 (hypothetically, the combination of BSC ".alpha." 62 and BTS A 64), BSS A is able to determine a "timing advance" (TA) value associated with that mobile terminal. Timing advance is a signal sent by BTS 64 (not shown) to mobile terminal 80 which mobile terminal 80 uses to advance its timings of transmissions to BTS 64 (not shown) so as to compensate for propagation delay. The BTS measures the delay of an access burst transmission relative to the expected signal from the mobile terminal 80 at zero distance under static conditions to determine the timing advance value for mobile terminal 80 ~~For more information on the calculation of timing advance values and their meaning, see the relevant (see section 5.4 of~~ GSM specification (e.g., 3GPP TS 05.10 "Technical Specification Group GSM/EDGE Radio Access Network; Digital Cellular Telecommunications System (Phase 2+); Radio Subsystem Synchronization (Release 1999), and PCT Application publication WO 98/15150, which are incorporated herein by reference). Based on this timing advance, the general position of the mobile terminal 80 may be determined as being somewhere within ring X, generally centered about the receiving antenna(s) of BSS A. Due to the relative resolution of the timing advance and the propagation velocity of radio waves, ring X typically has a width of approximately 500 meters (based on typical GSM and GPRS systems). Based on the timing advance for BSS A, the location of the mobile terminal 80 may be anywhere within ring X. However, if a timing advance from the same mobile terminal 80 to BSS B (e.g., BSC ".alpha." and BTS B) is available, indicating that the mobile terminal 80 is also within ring Y, then the mobile terminal 80 should be located where ring X and ring Y intersect. However, ring X and ring Y intersect at two areas. In order to determine which of these two intersecting areas is correct, reference is made to the timing advance from the same mobile terminal 80 to BTS C (e.g., BSC ".alpha." and BTS C, or BSC ".beta." and BTS C), indicating that the mobile terminal 80 is also located within ring Z. As rings

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X,Y,Z should only intersect in one area, the mobile terminal 80 should be located where the area where rings X,Y,Z intersect. Thus, if the appropriate timing advance values for BSS A-C are available, the location of the mobile terminal 80 may be determined without resort to GPS or the like. For the best resolution, the various timing advance values should be gathered over a short period of time, so as to minimize the effects of intervening movement by the mobile terminal 80.

Please replace the paragraph beginning at page 9, line 1, with the following amended paragraph.

In order to obtain the timing advance value for mobile terminal 80 with respect to two other cells, BSS 60 causes the mobile terminal 80 to artificially change cells (boxes 240-260). That is, BSS 60 causes the mobile terminal 80 to change cells for the purpose of obtaining a timing advance value, when the mobile terminal 80 would not otherwise do so. BSS 60, and typically the BSC 62 of BSS A 60, determines which cell, other than the current cell, that the mobile terminal can best be sent to (box 240). If no suitable cell can be found by the BSS 60, an appropriate error message may be sent to the SMLC 38. The BSS 60 sends a packet cell change order message the mobile terminal 80, via the BTS 64 associated with the current cell, to order the mobile terminal 80 to change to the cell the BSS 60 determined was best (box 240). This packet cell change order message should inform the mobile terminal 80 about which frequency to tune to and what base station identity code (BSIC) should be found on that frequency. The details of the packet cell change order are known to those of skill in the art, ~~but reference may be made to specification 3GPP TS 04.60 for further details (specification incorporated herein by reference).~~